

Application Serial No. ~~40/622,748~~ 11/662,718
Reply to Office Action of May 1, 2007

PATENT
Docket: CU-3360

REMARKS

In the Office Action, dated May 1, 2007, the Examiner states that Claims 1-3 and 6-26 are pending, Claims 1-3 and 6 are rejected and Claims 7-26 are withdrawn. By the present Amendment, Applicant amends the claims.

In the Office Action, Claims 1-3 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kawase (US 6,730,351) in view of Gordon et al. (US 4,811,038), Nonto et al. (US 5,921,836, Pham et al. (US 2002/01273440 and Eida et al. (US 2001/0050532). Claim 6 is rejected in further view of Mian et al. (US 6,319,469). The Applicant considers that the amendment to Claim 1 overcome these rejections.

Claim 1 has been amended to make it clear that the ink is heated over the organic EL material, the substrate is cooled from underneath, and the Peltier element may be one of the devices used for cooling.

In the cited references, the substrate itself is heated. However, in the present claimed invention, the substrate itself is not heated, but the ink is "heated over thereof" and the substrate is "cooled from underneath" so that the temperature of the substrate does not rise. In the present invention, a uniform organic EL layer can be obtained because of this "heating and cooling".

Each limitation added to current amended Claim 1 is described below.

1. In relation to "controlling the temperature of the substrate so the temperature of the substrate does not rise":

In Item 3 (page 3, lines 13-21) of the Official Action, the comment of the rejection concerning "controlling the temperature of the substrate so the temperature of the substrate does not rise" is described. The rejection insists that "controlling the temperature of the substrate so the temperature of the substrate does not rise" can be easily achieved by combining:

(1) disclosure of Pham that the substrate may already be heated at the time of deposition, and

(2) disclosure of Kawase that keeping the substrate temperature constant in order to ensure process repeatability.

Pham does not mention whether the substrate is heated at the time of deposition, or not. Therefore, it is assumed that the rejection insists that Pham teaches to "control the temperature of the substrate so the temperature of the substrate does not rise", because if the ink were deposited onto an "already heated

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substrate", and the substrate were not heated at the time of deposition, the temperature of the substrate would not rise.

However, on page 15, lines 11-24 of the present specification, a problem is described that when "forcible drying by heating" is carried out by heating the stage which supports the substrate, the nozzles are heated by the heat from the stage so that the nozzles are clogged. Therefore, in the present invention, in order to prevent occurrence of such a problem, the deposited ink is heated over thereof, and not by heating the substrate from underneath, and the temperature of the substrate is controlled (that is, the stage is cooled) so the temperature of the substrate does not rise.

2. In relation to Peltier element:

In Item 4 (page 4) of the Official Action, reasons for rejecting original Claim 6 are described. From the description, it seems that the rejection considers that the "Peltier element" described in Claim 6 is used "for heating". However, in the present invention, a chiller, a Peltier element or a combination thereof is used for cooling the stage. Therefore, to make this clear, a limitation "cooling" the stage with at least one of a chiller and a Peltier element" is added to amend Claim 1 (before amendment, Claim 1 was stated as: "controlling the temperature of the substrate").

The phrase "cooling the stage" is not used in the present specification. However, on page 16, line 25-page 17, line 5, it is stated that "As mentioned above, it is not preferable for the stage temperature to be raised. In that case, it is preferable to provide a temperature adjusting mechanism, which mainly cools, so as the substrate temperature will not be raised. As a temperature adjusting mechanism, a chiller, a Peltier or a combination thereof, in which cooling water or cooling oil is circulated within grooves provided on the stage, can be used."

Therefore, the phrase "cooling the stage" is supported by the above-mentioned description so that no new matter is added to currently amended Claim 1.

Furthermore, these above-mentioned references do not disclose nor suggest "cooling of the stage." Therefore it should be understood that means for cooling the stage by a chiller, a Peltier element or a combination thereof is not disclosed nor suggested in these references.

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In light of the foregoing response, all the outstanding objections and rejections are considered overcome. Applicant respectfully submits that this application should now be in condition for allowance and respectfully requests favorable consideration.

Respectfully submitted,

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Date



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